

FIG. 2

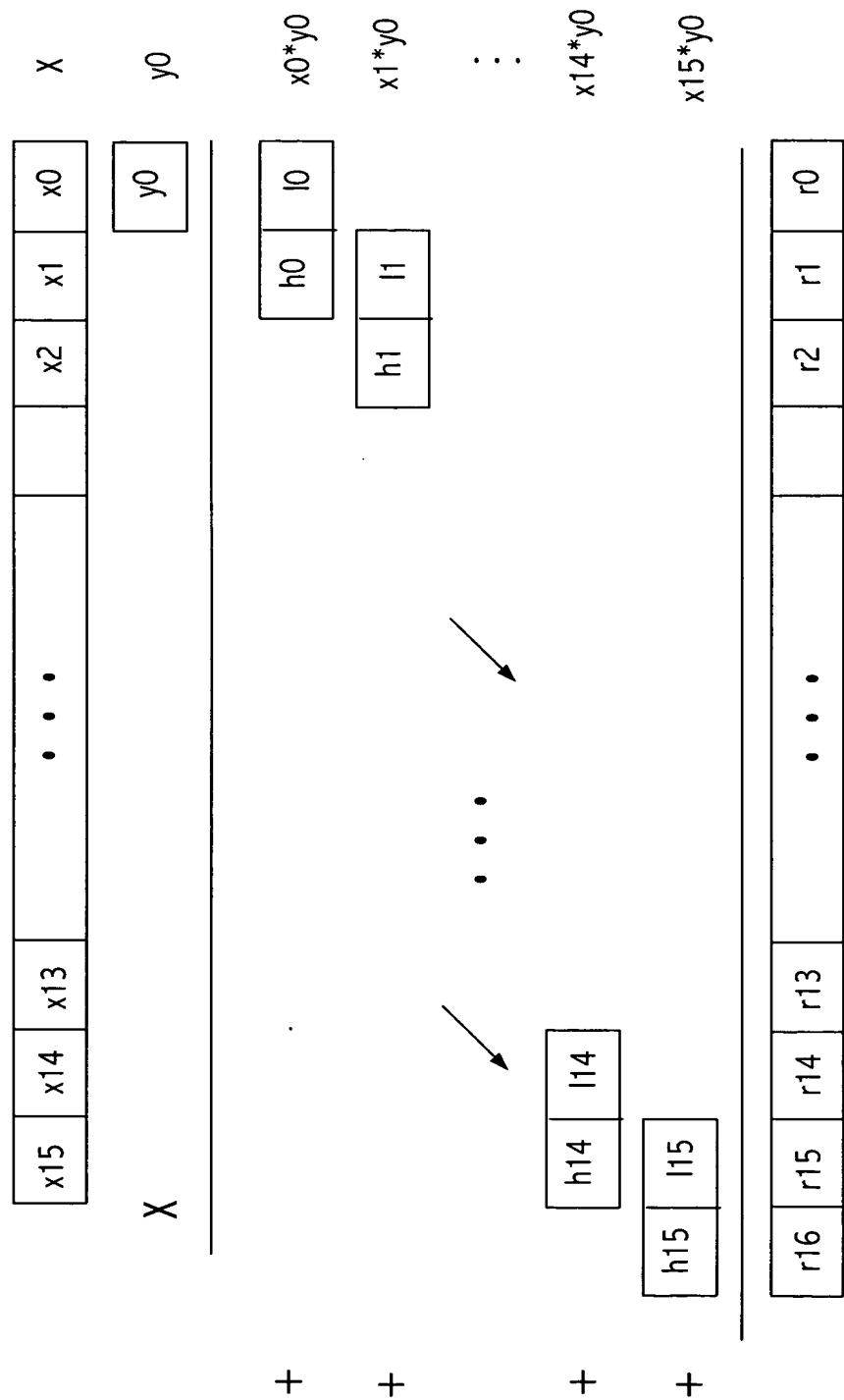


FIG. 3

4/36

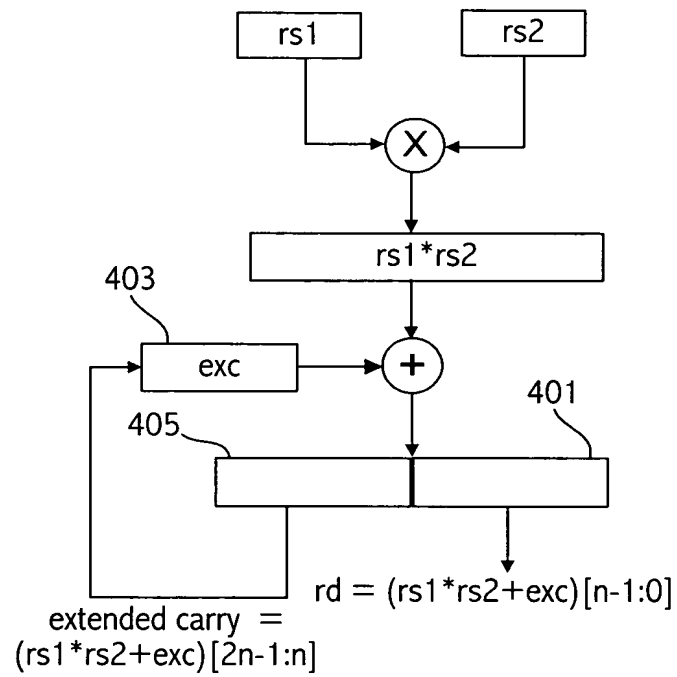


FIG. 4A

5/36

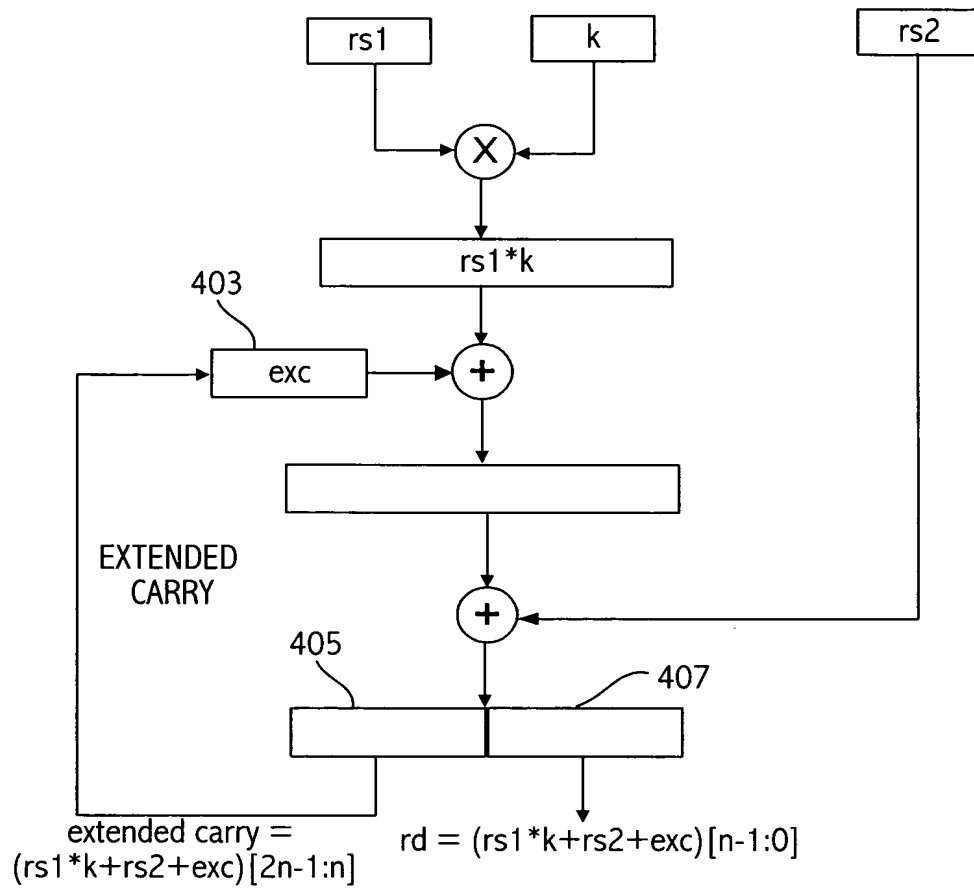


FIG. 4B

6/36

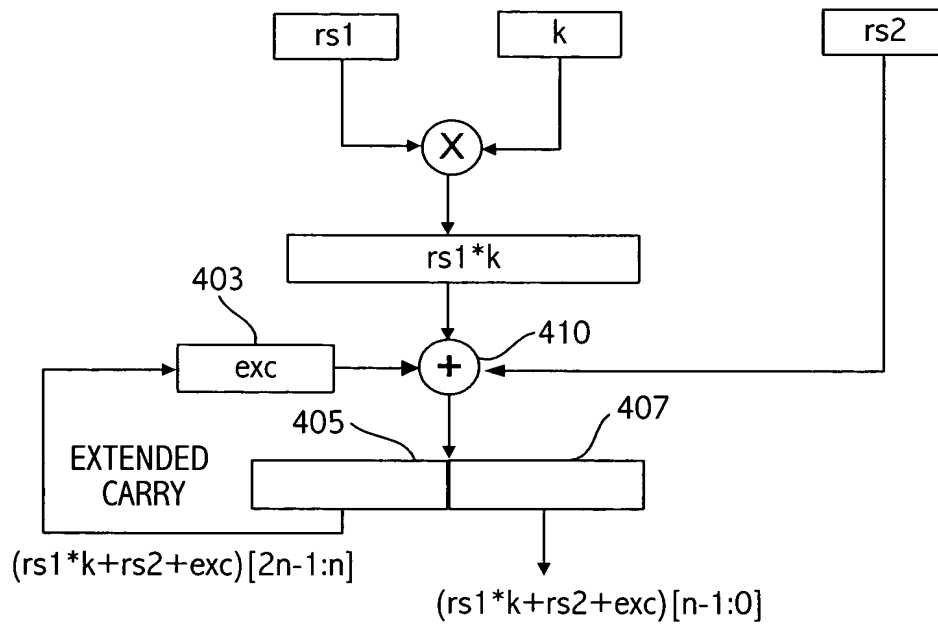


FIG. 4C

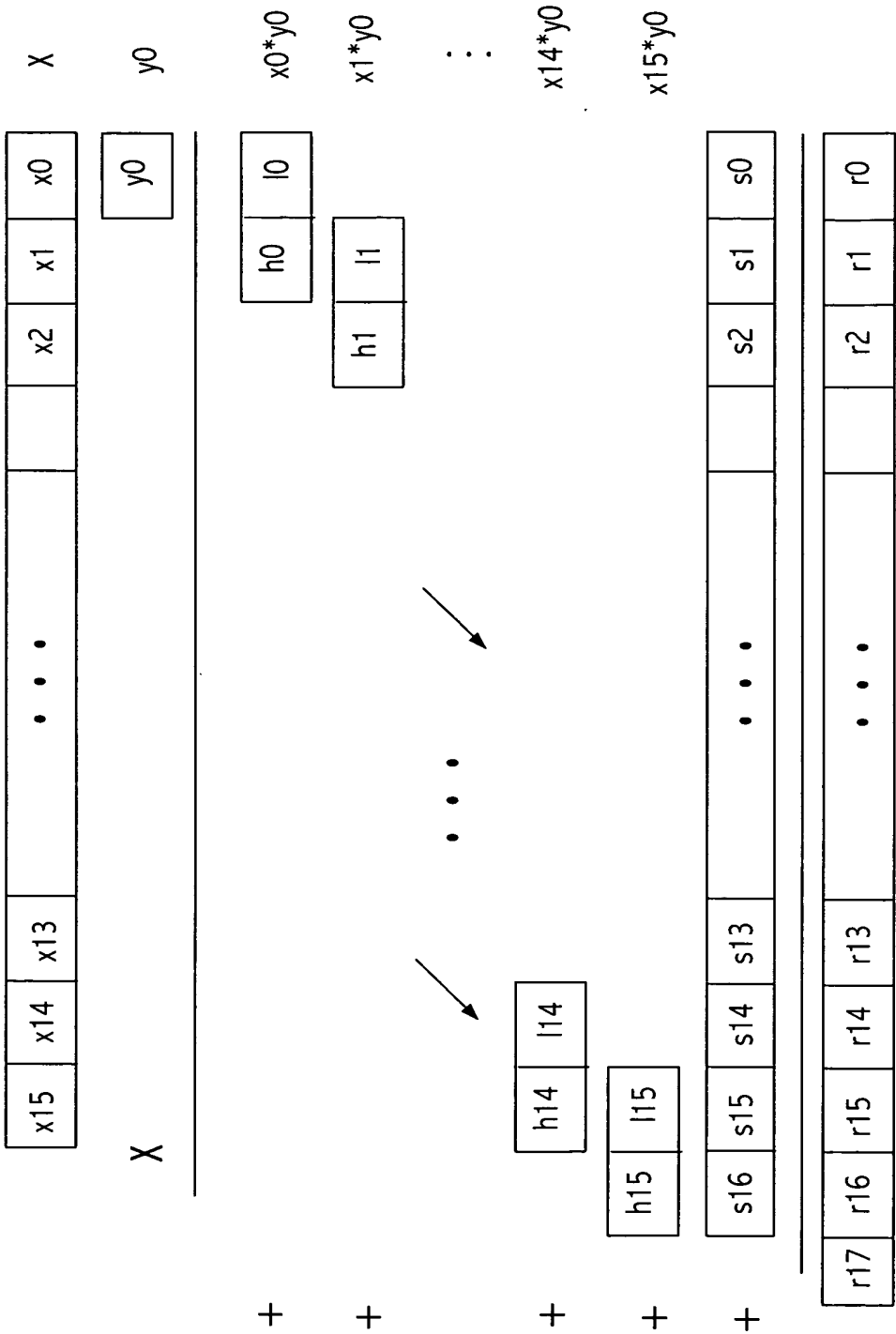


FIG. 5



10/36

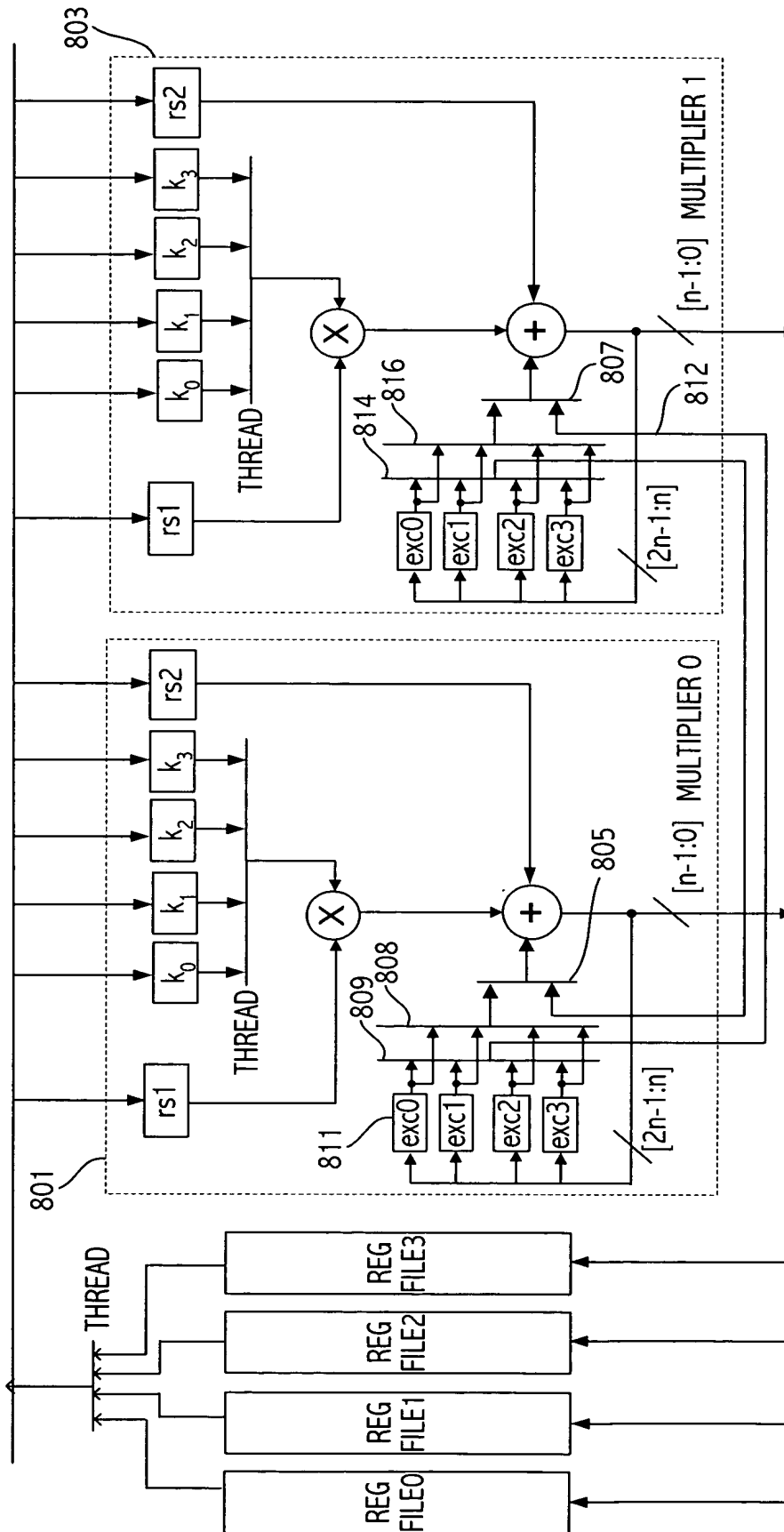


FIG. 8

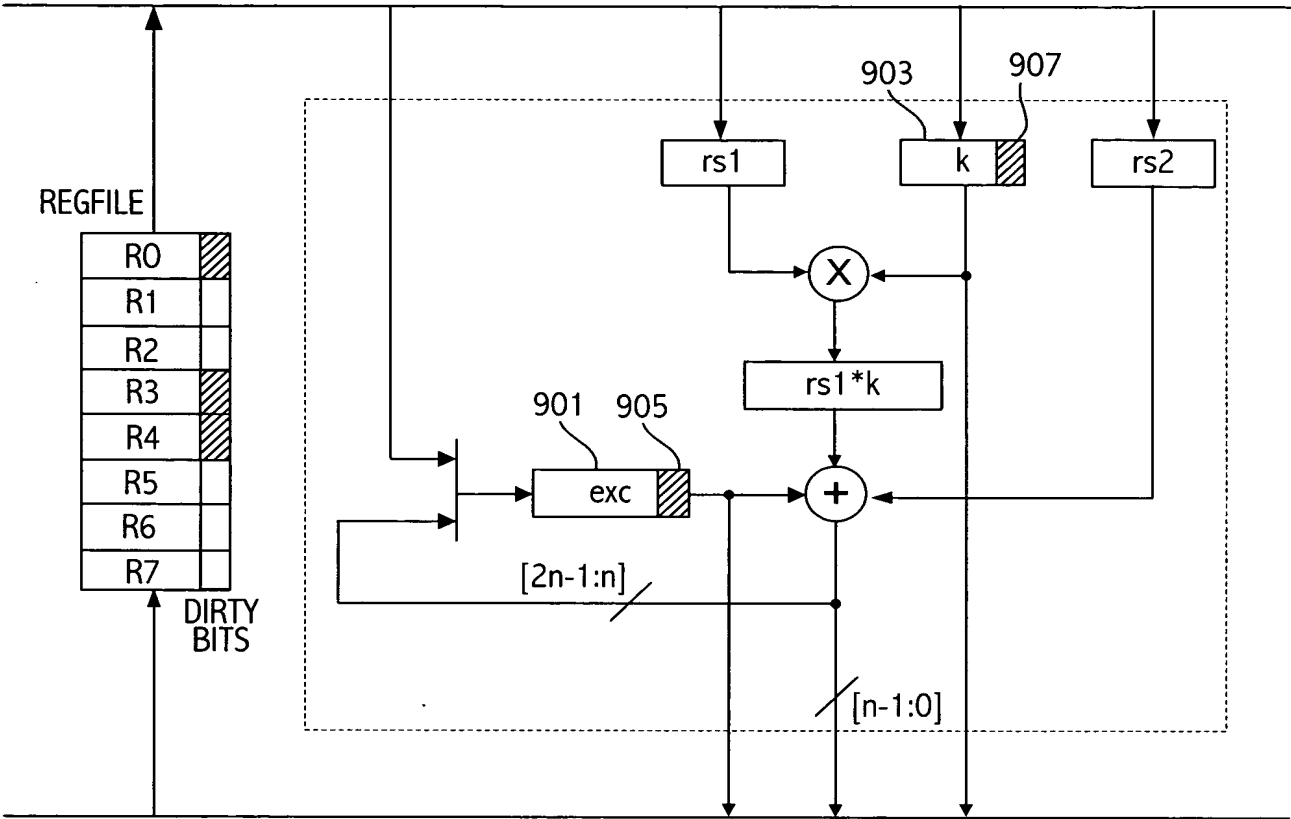


FIG. 9

12/36

$$\begin{array}{r}
 \begin{array}{cccccccc}
 X3 & X2 & X1 & X0 & * & Y3 & Y2 & Y1 & Y0 & + & EX3 & EX2 & EX1 & EX0 \\
 & & & & & P03 & P02 & P01 & P00 & & & & & \\
 + & & & & & P13 & P12 & P11 & P10 & & & & & \\
 + & & & & & P23 & P22 & P21 & P20 & & & & & \\
 + & & & & & P33 & P32 & P31 & P30 & & & & & \\
 + & & & & & EX3 & EX2 & EX1 & EX0 & & & & & \\
 \hline
 = & S6 & S5 & S4 & S3 & S2 & S1 & S0 & & & & & & \\
 + & C7 & C6 & C5 & C4 & C3 & C2 & C1 & & & & & & \\
 \hline
 & EX3 & EX2 & EX1 & EX0 & rd3 & rd2 & rd1 & rd0 & & & & &
 \end{array}
 \end{array}
 \quad \begin{array}{l}
 P_{ij} \\
 = X_i * Y_j
 \end{array}$$

FIG. 10

$$\begin{array}{r}
 \begin{array}{cccccccc}
 X3 & X2 & X1 & X0 & * & Y3 & Y2 & Y1 & Y0 & + & (0,S6,S5,S4) & + & (C7,C6,C5,C4) & + & (0,0,0,CC4) \\
 & & & & & P03 & P02 & P01 & P00 & & & & & & \\
 + & & & & & P13 & P12 & P11 & P10 & & & & & & \\
 + & & & & & P23 & P22 & P21 & P20 & & & & & & \\
 + & & & & & P33 & P32 & P31 & P30 & & & & & & \\
 + & & & & & S6 & S5 & S4 & & \leftarrow & \text{PREVIOUS SUM OUTPUT} & & & & \\
 + & & & & & C7 & C6 & C5 & C4 & \leftarrow & \text{PREVIOUS CARRY OUTPUT} & & & & \\
 \hline
 = & S6 & S5 & S4 & S3 & S2 & S1 & S0 & & & & & & & \\
 + & C7 & C6 & C5 & C4 & C3 & C2 & C1 & & & & & & &
 \end{array}
 \end{array}
 \quad \begin{array}{l}
 \left. \begin{array}{l} P03 P02 P01 P00 \\ P13 P12 P11 P10 \\ P23 P22 P21 P20 \\ P33 P32 P31 P30 \end{array} \right\} \text{INPUTS AT START OF WALLACE TREE} \\
 \left. \begin{array}{l} S6 S5 S4 \\ C7 C6 C5 C4 \end{array} \right\} \text{INPUTS IN MIDDLE OF WALLACE TREE} \\
 \left. \begin{array}{l} S6 S5 S4 S3 S2 S1 S0 \\ C7 C6 C5 C4 C3 C2 C1 \end{array} \right\} \text{NEW WALLACE TREE SUM OUTPUT} \\
 \left. \begin{array}{l} C7 C6 C5 C4 C3 C2 C1 \end{array} \right\} \text{NEW WALLACE TREE CARRY OUTPUT}
 \end{array}
 \quad P_{ij} = X_i * Y_j$$

FIG. 11

$$\begin{array}{r}
 \begin{array}{cccc}
 & S3 & S2 & S1 & S0 \\
 + & C3 & C2 & C1 & \\
 + & & & & CC4 \\
 \hline
 & CC4 & RD3 & RD2 & RD1 & RD0
 \end{array}
 \end{array}
 \quad \begin{array}{l}
 \leftarrow \text{PREVIOUS CLA CARRY OUT} \\
 \leftarrow \text{NEW CLA OUTPUT}
 \end{array}$$

FIG. 12

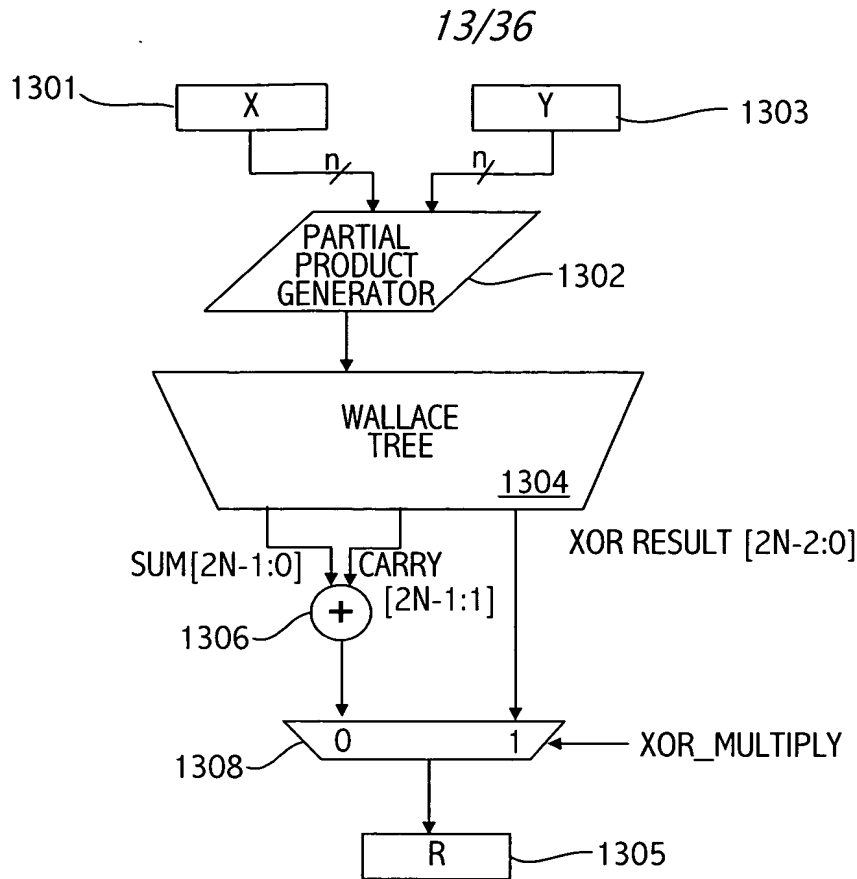


FIG. 13

						~SD	SD	SD	D8	D7	D6	D5	D4	D3	D2	D1	D0
				1	~SE	E8	E7	E6	E5	E4	E3	E2	E1	E0			SD
		1	~SF	F8	F7	F6	F5	F4	F3	F2	F1	F0			SE		
1	-SG	G8	G7	G6	G5	G4	G3	G2	G1	G0			SF				
	H7	H6	H5	H4	H3	H2	H1	H0		SG							
									S15	S14	S13	S12	S11	S10	S9	S8	
C16	C16	C16	C16	C16	C16	C16	C16	C16	C15	C14	C13	C12	C11	C10	C9	C8	
									Z7	Z6	Z5	Z4	Z3	Z2	Z1	Z0	
<hr/>																	
	S15	S14	S13	S12	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0	
C16	C15	C14	C13	C12	C11	C10	C9	C8	C7	C6	C5	C4	C3	C2	C1	C0	

WITH [S7:S0] AND [C7:C0] GOING TO THE CARRY LOOK-AHEAD ADDER.

FIG. 12B

14/36

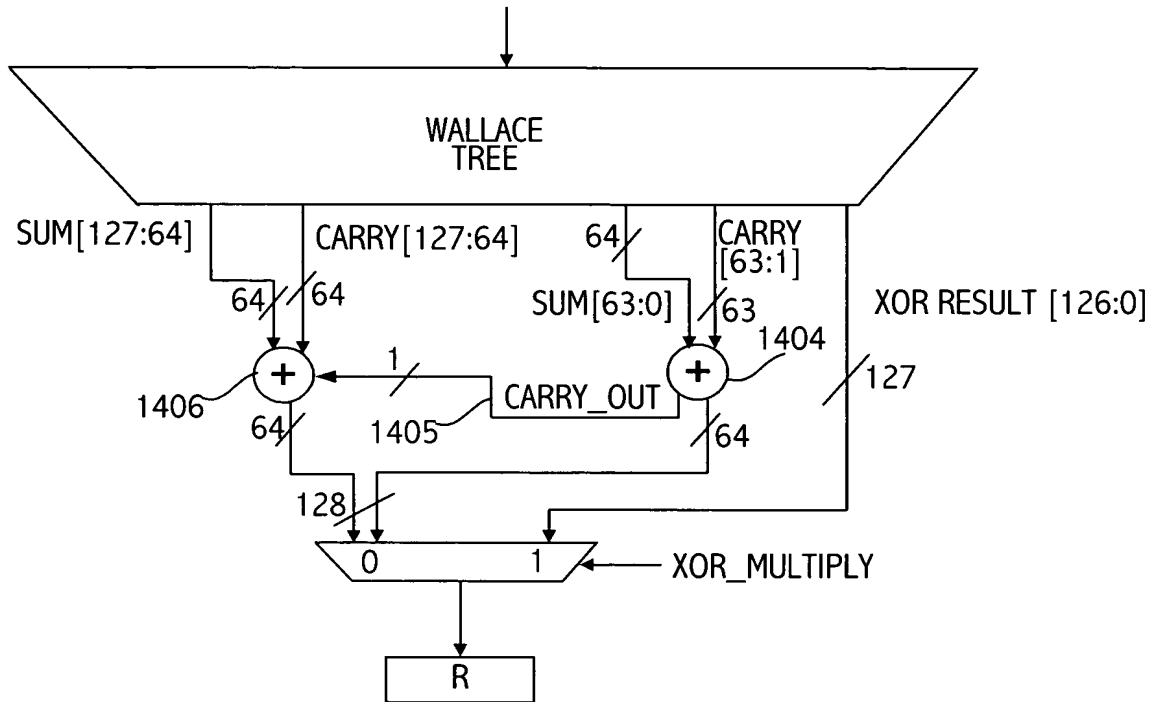


FIG. 14

15/36

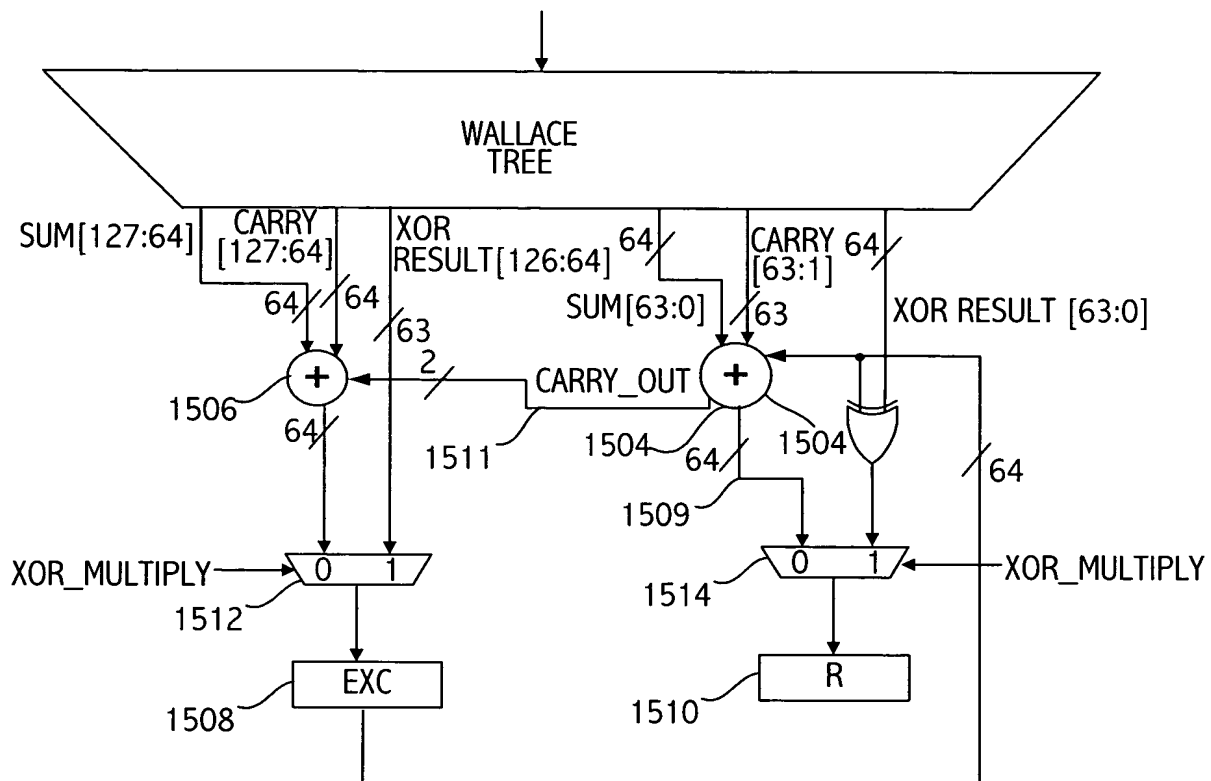


FIG. 15

17/36

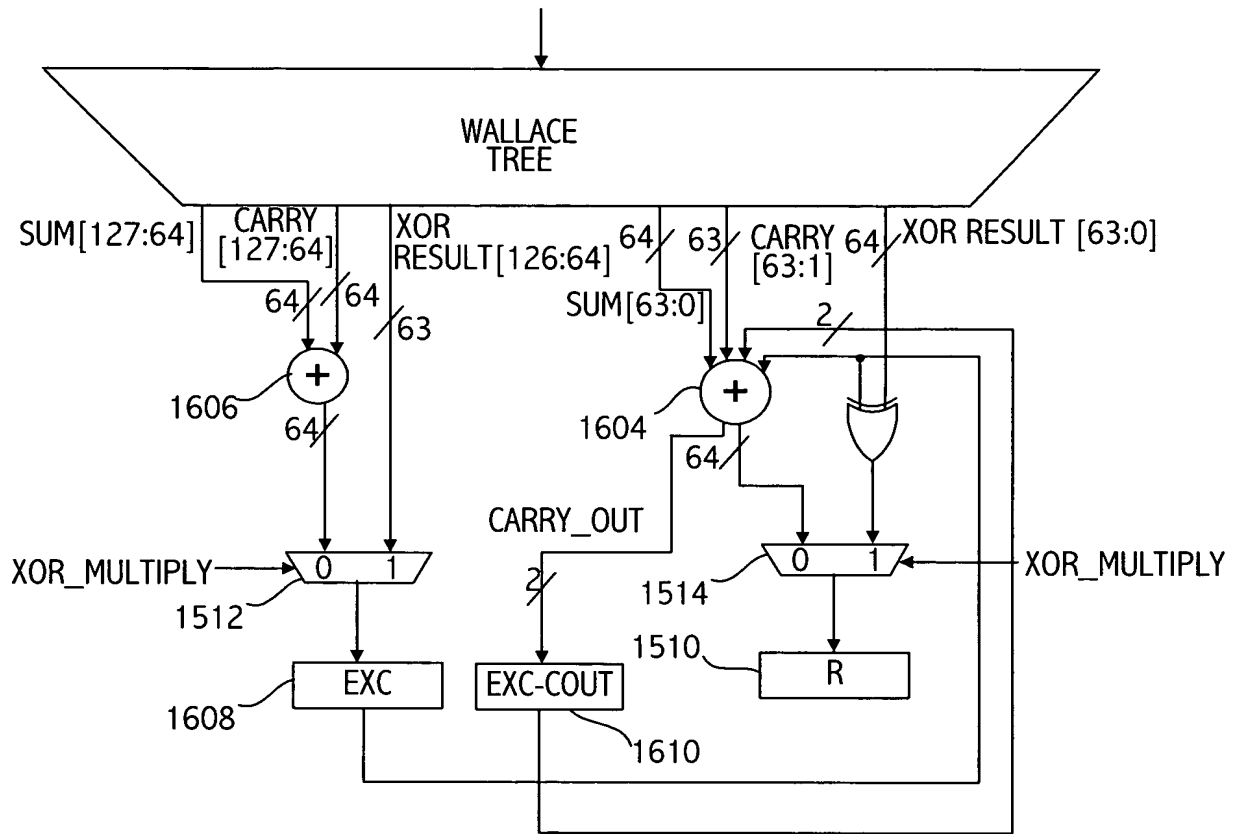


FIG. 16

18/36

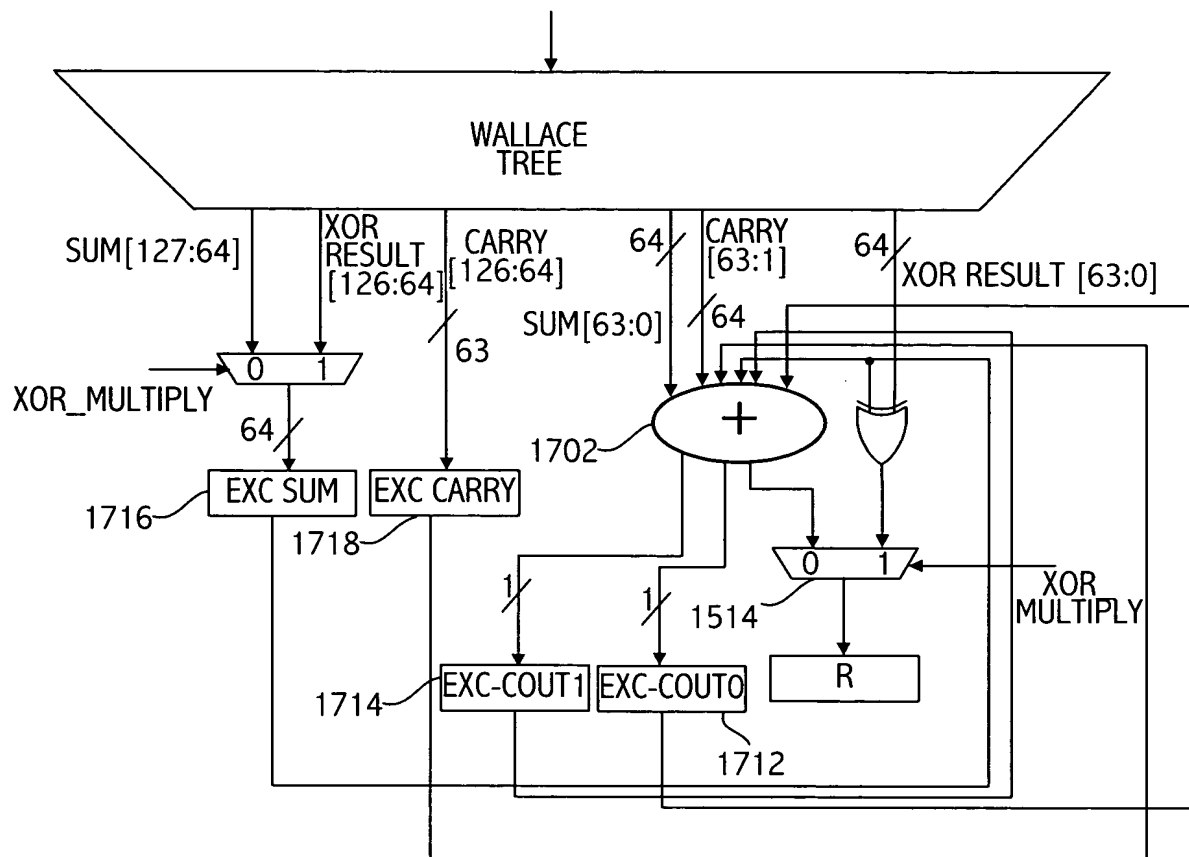


FIG. 17

19/36

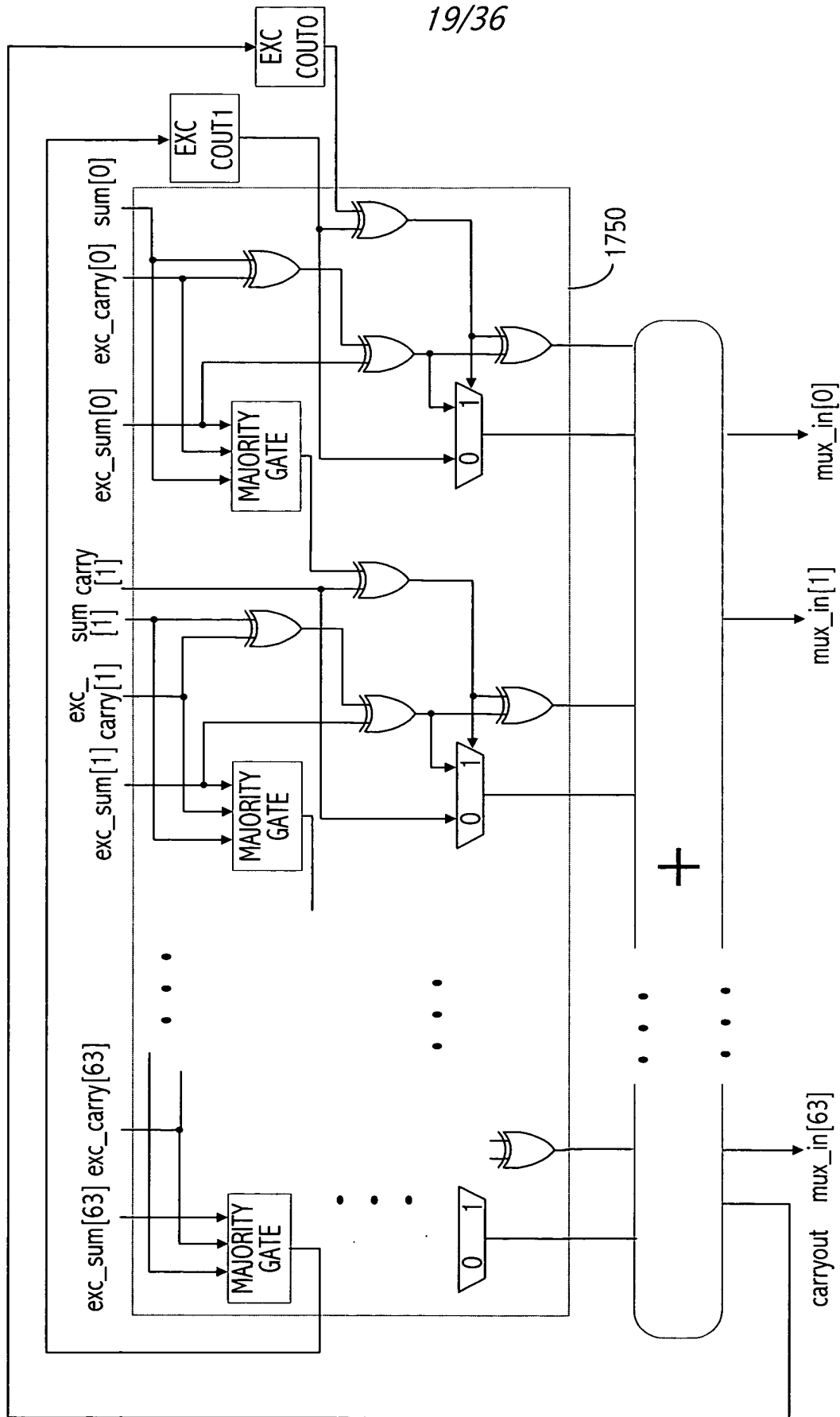


Fig. 17A

20/36

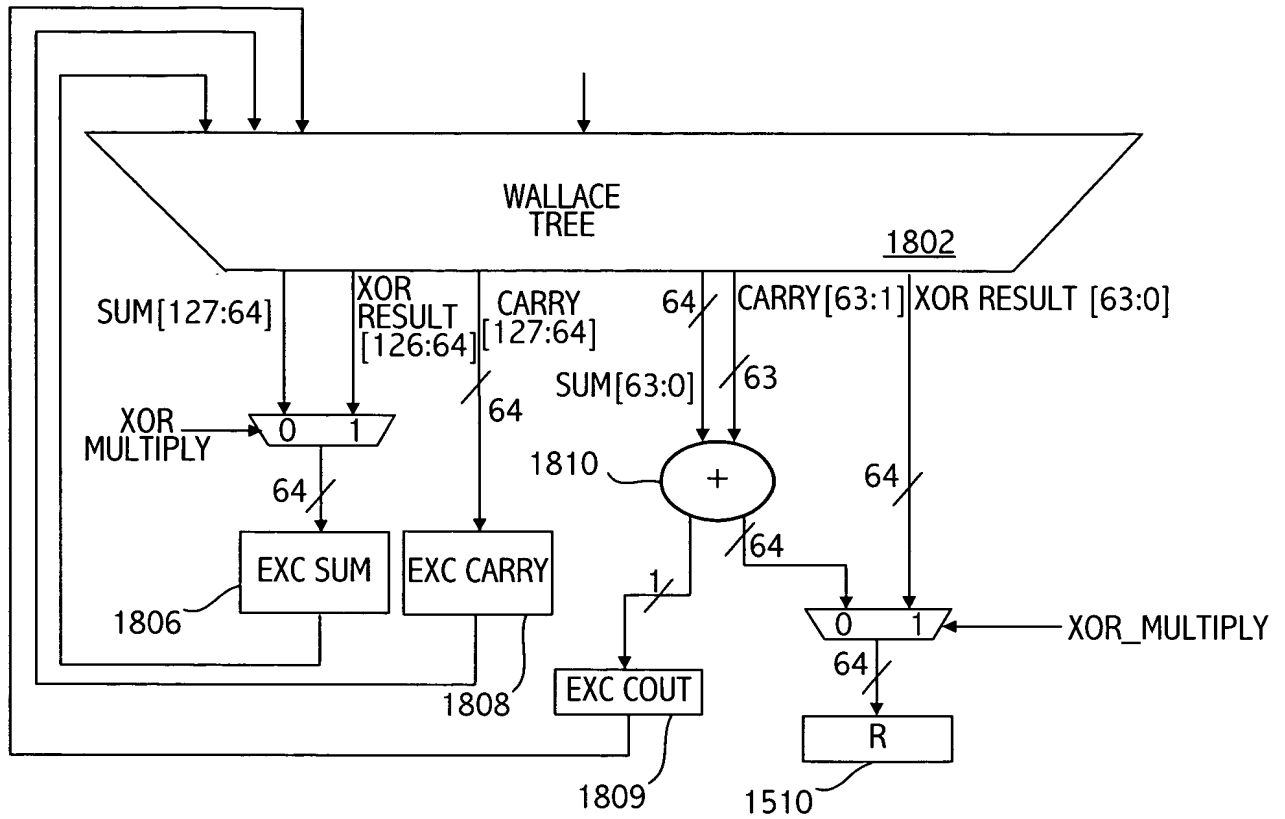


FIG. 18

21/36

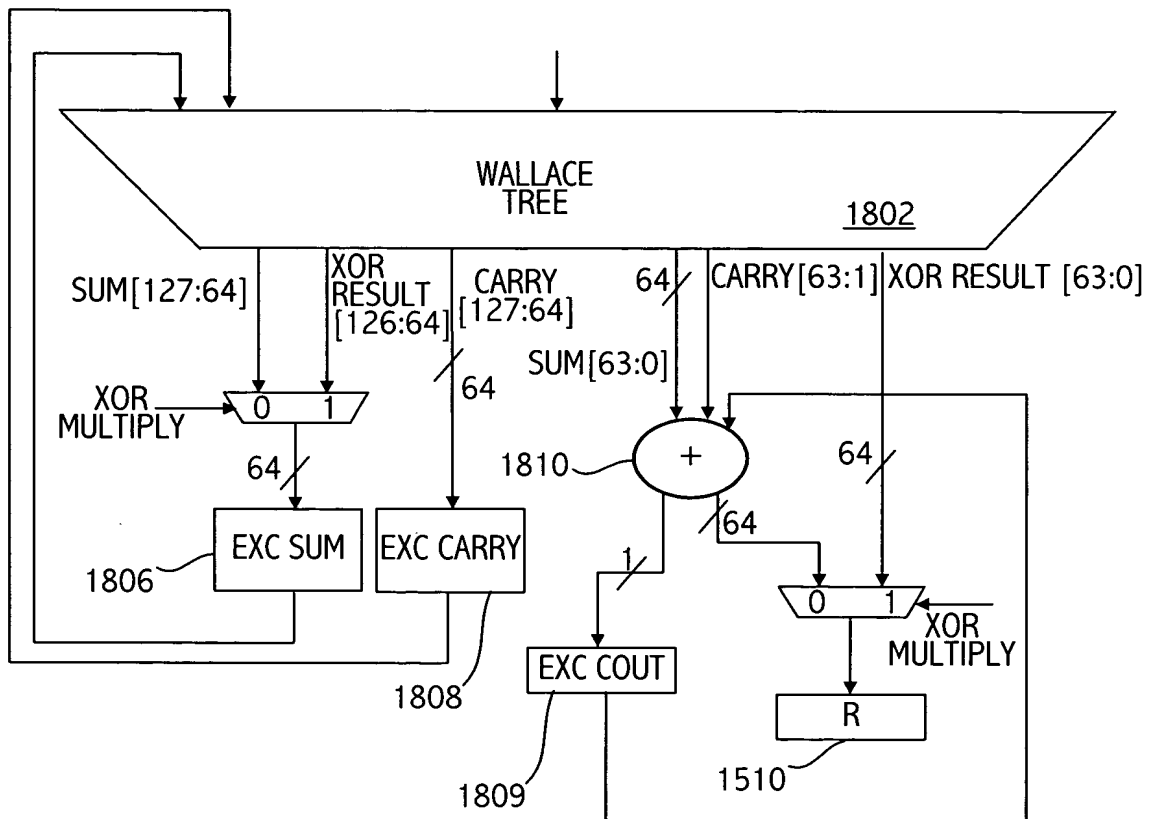


FIG. 19

22/36

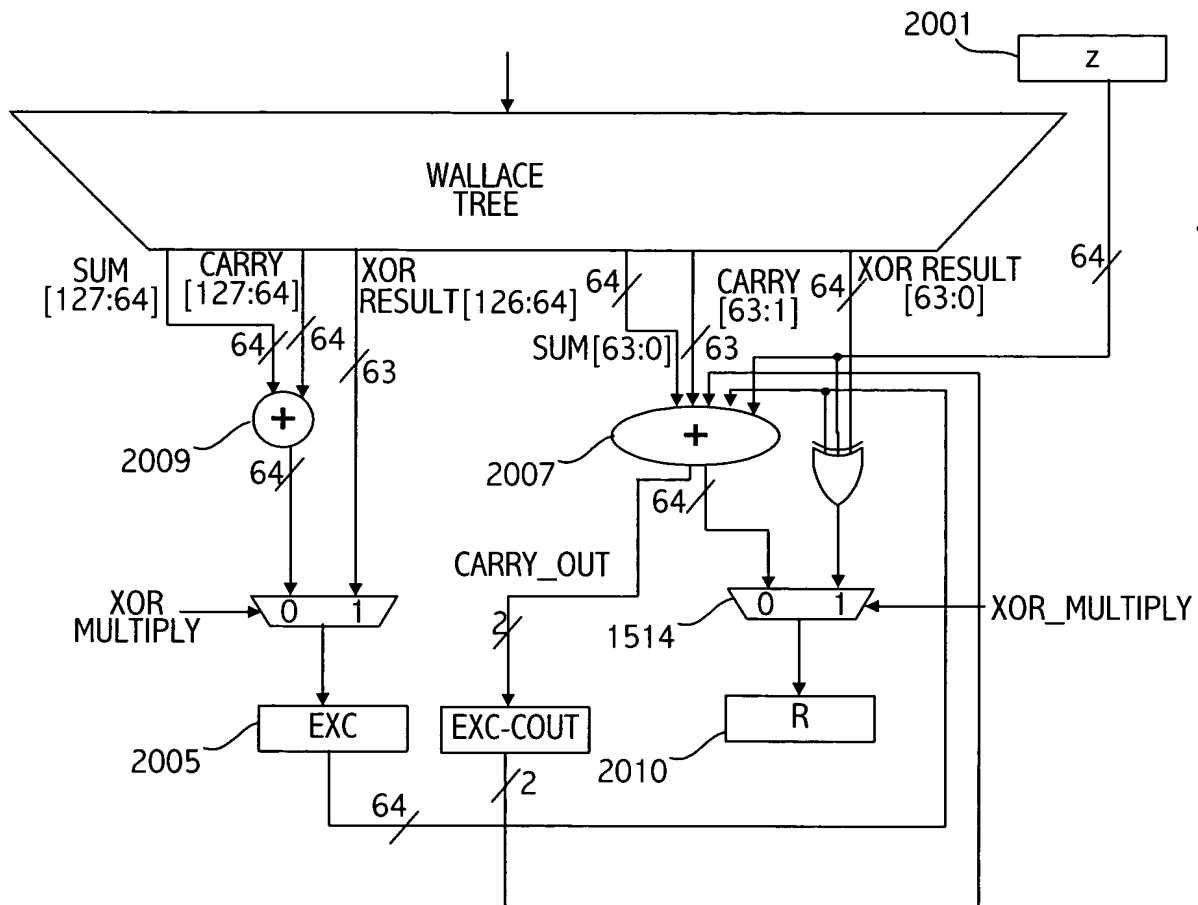


FIG. 20

23/36

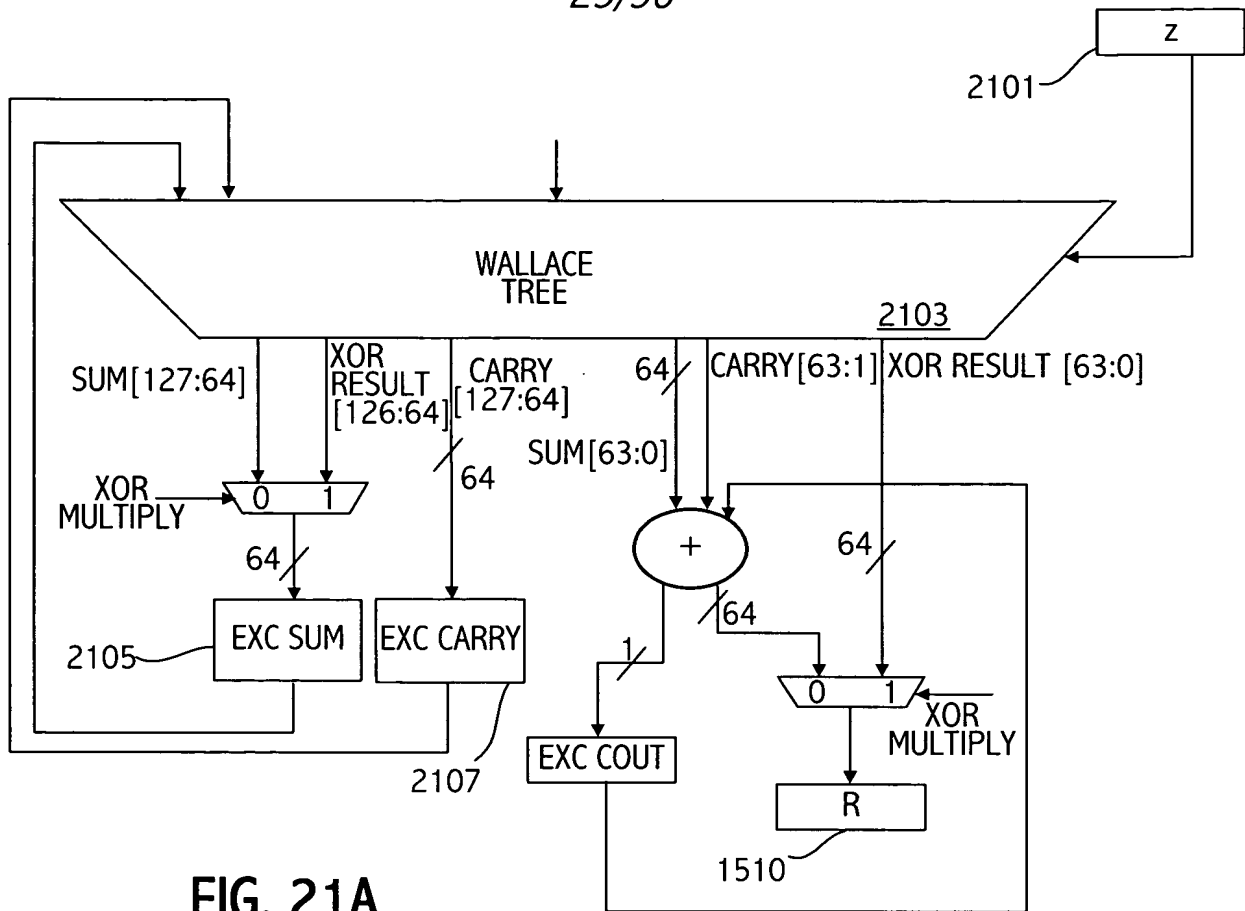


FIG. 21A

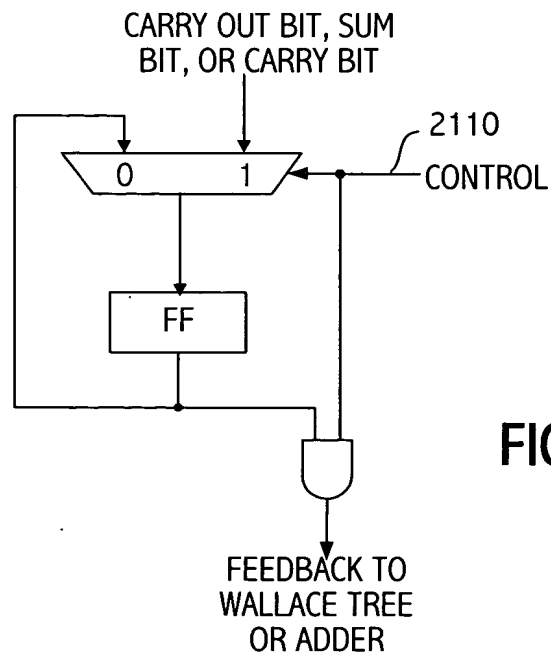


FIG. 21B

24/36

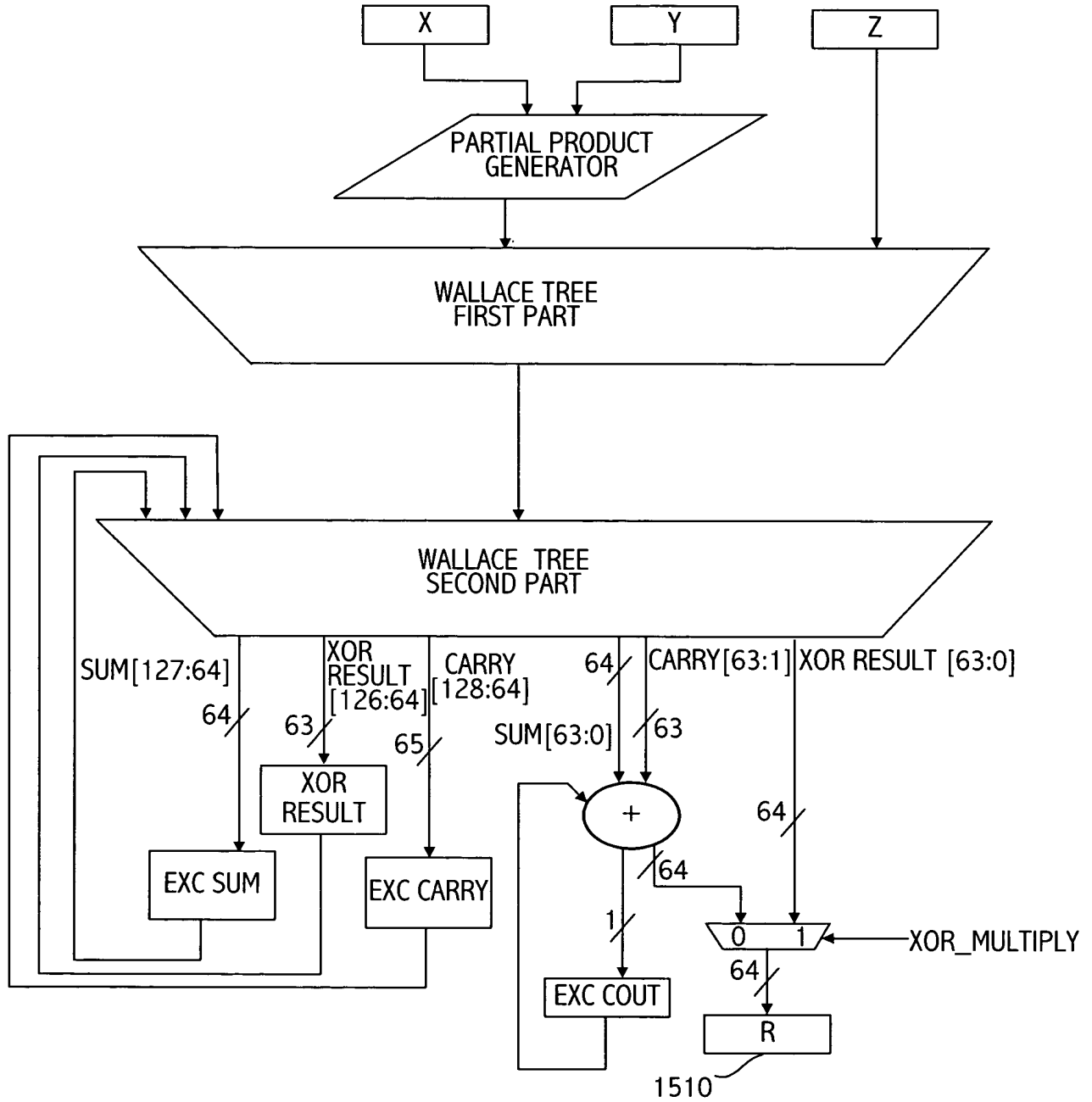


FIG. 21C

25/36

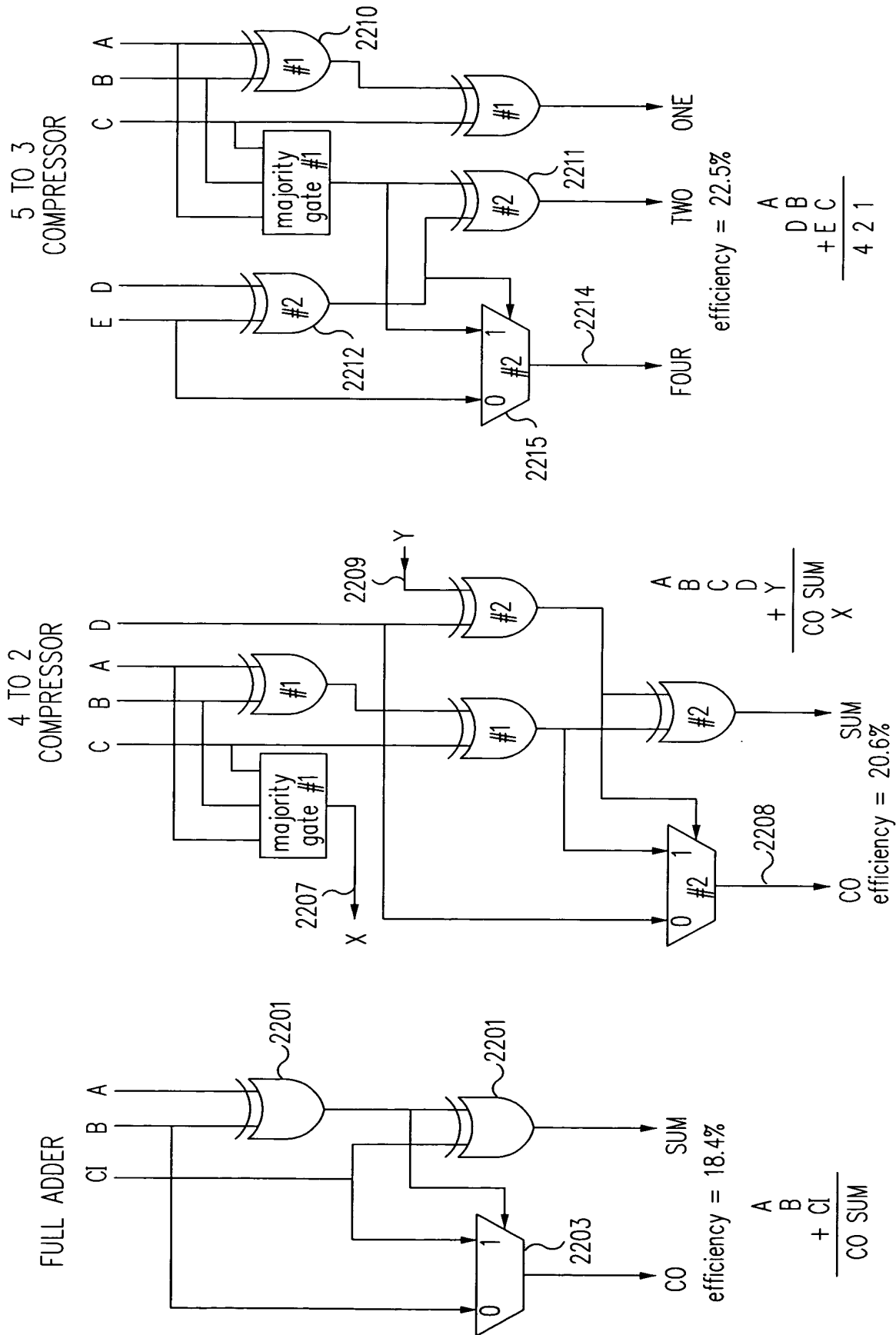


FIG. 22A

FIG. 22B

FIG. 22C

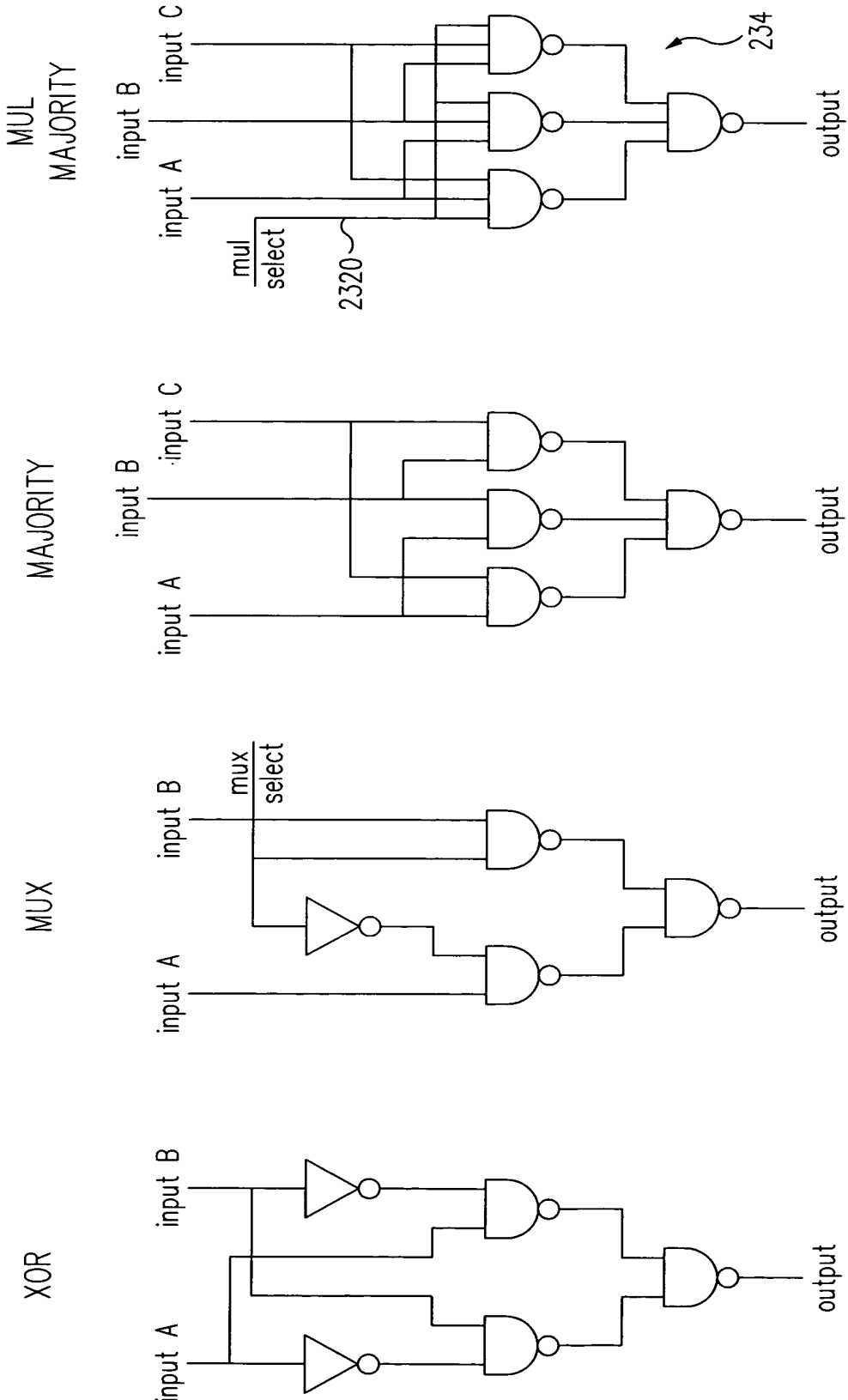
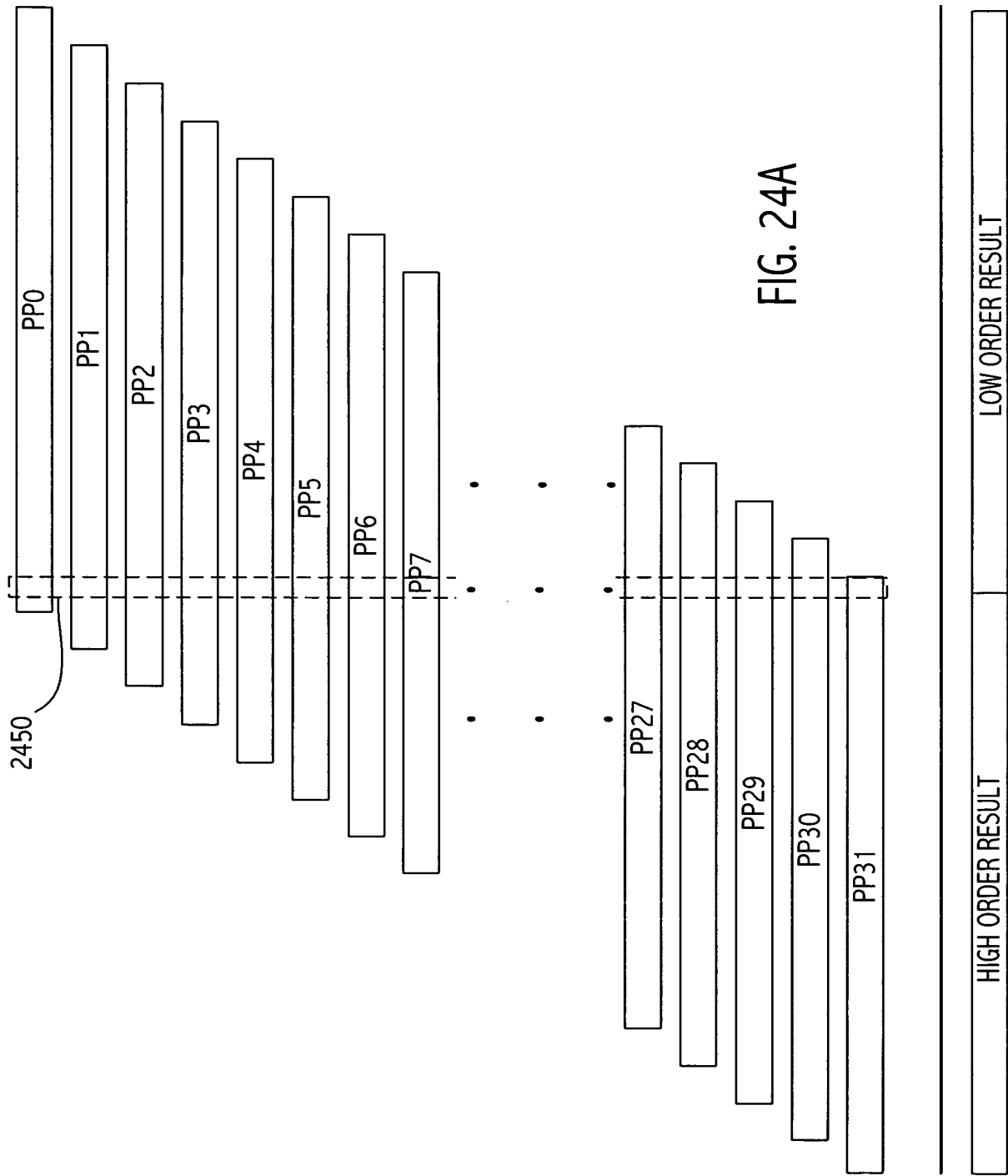


FIG. 23A

FIG. 23B

FIG. 23C

FIG. 23D



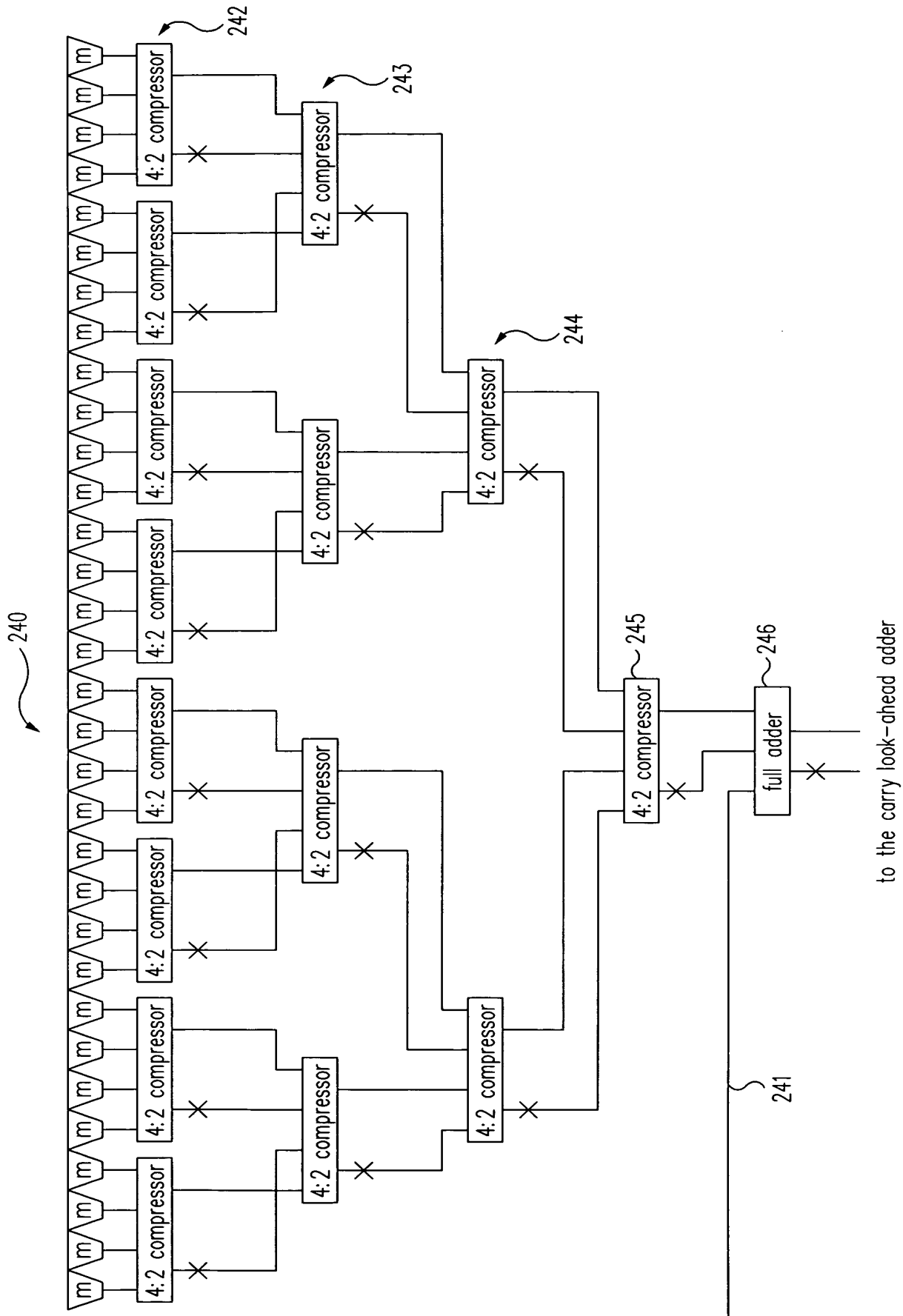


FIG. 24B

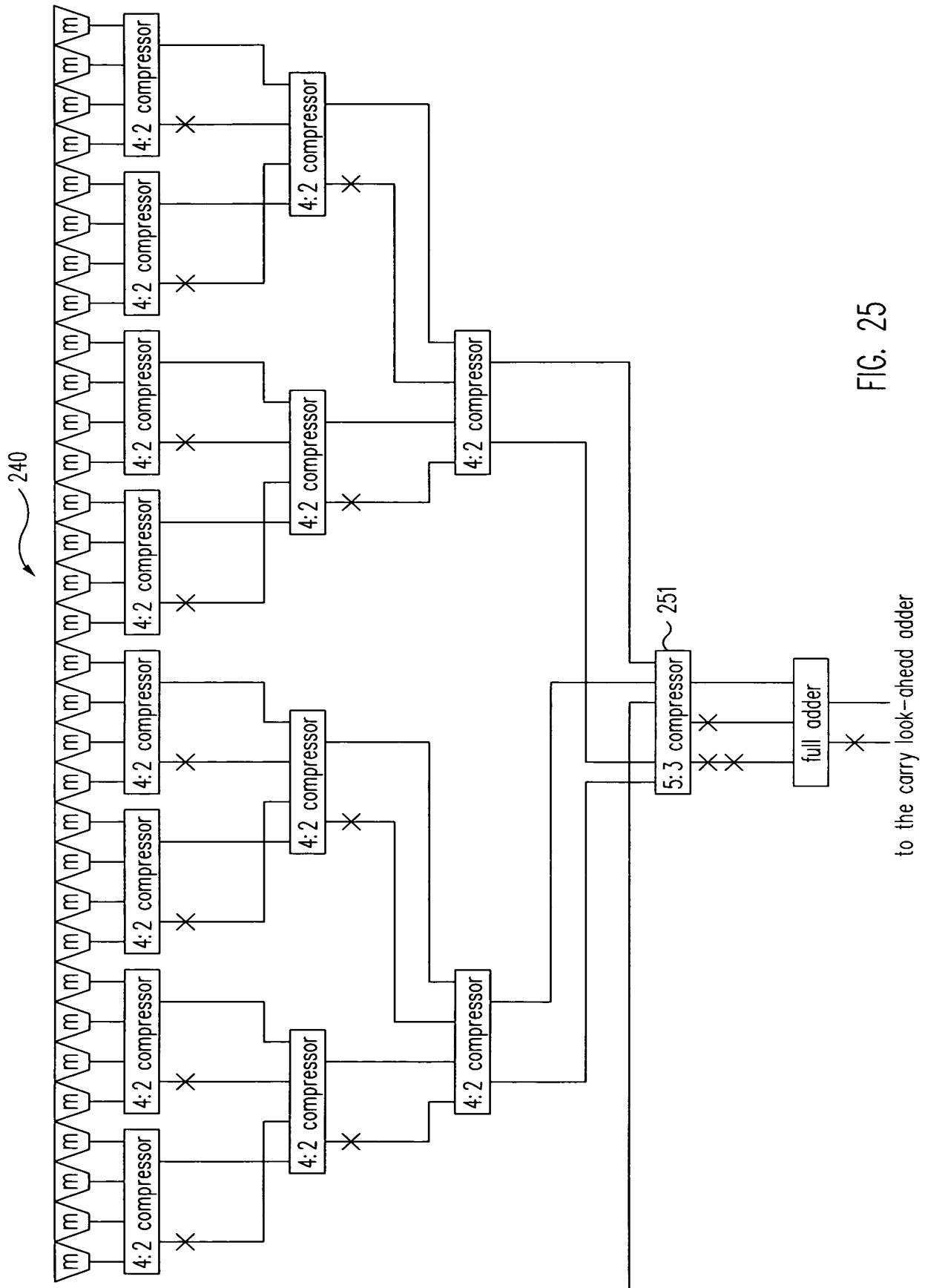


FIG. 25

30/36

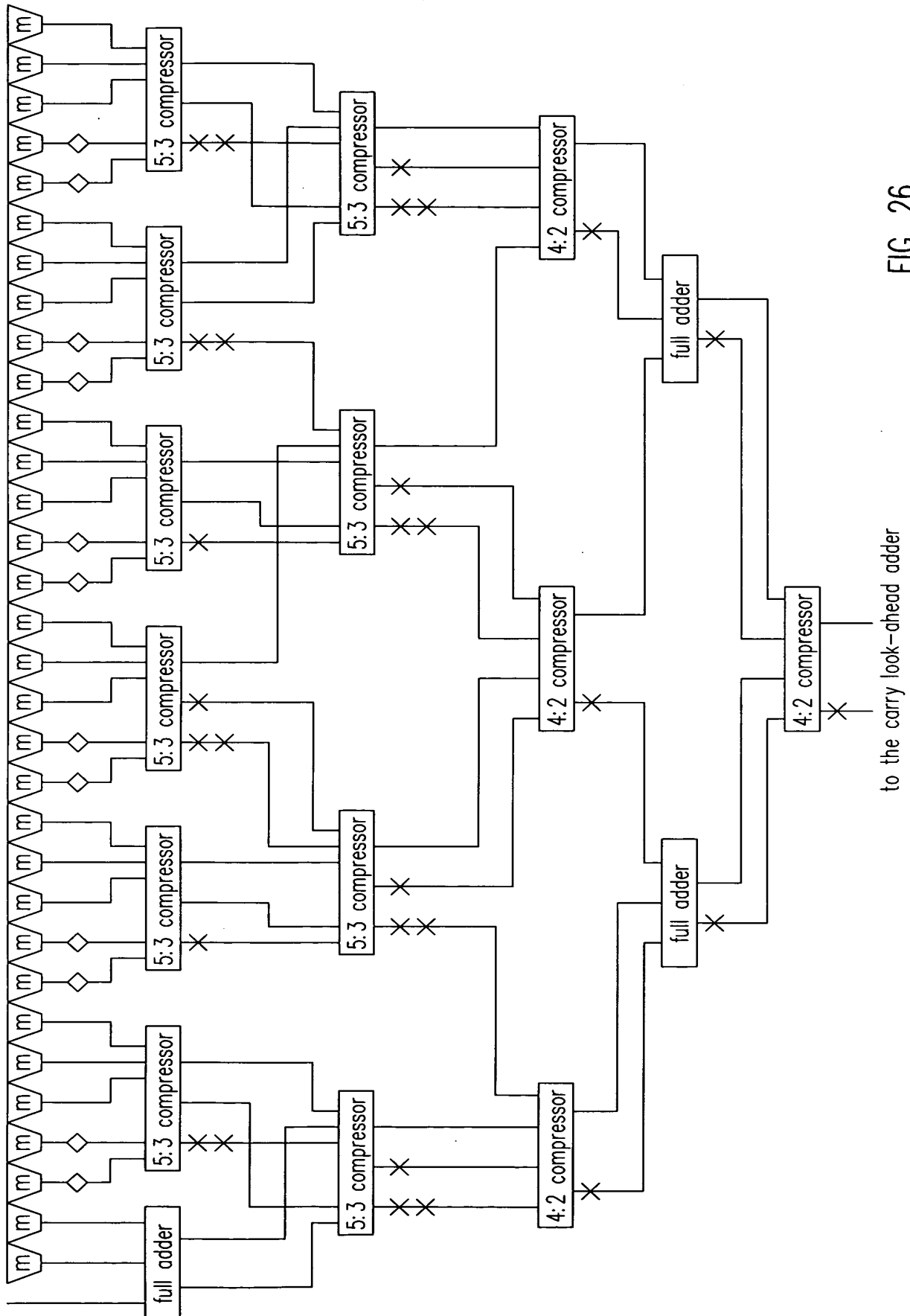
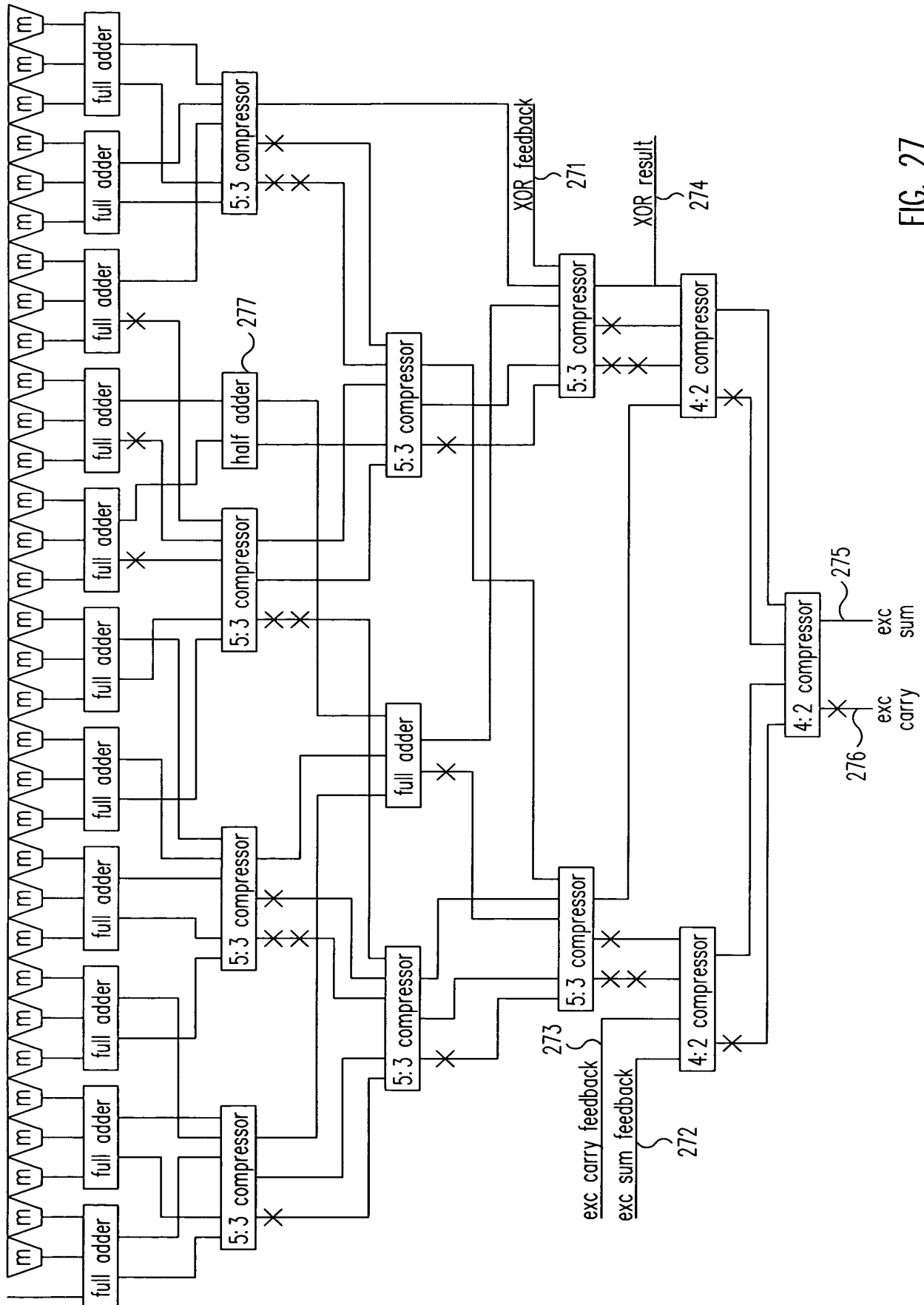


FIG. 26



and to the carry look-ahead adder

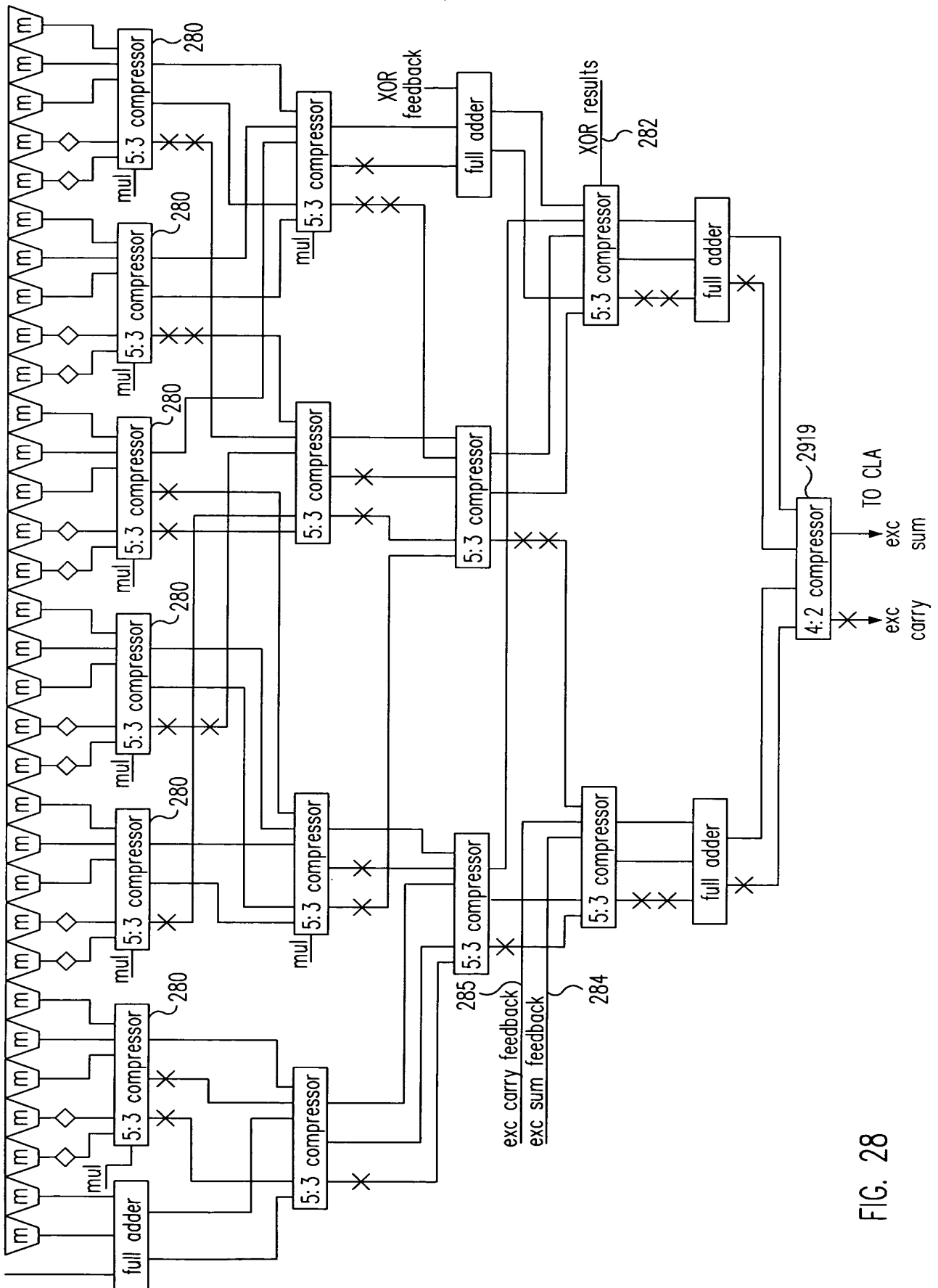


FIG. 28

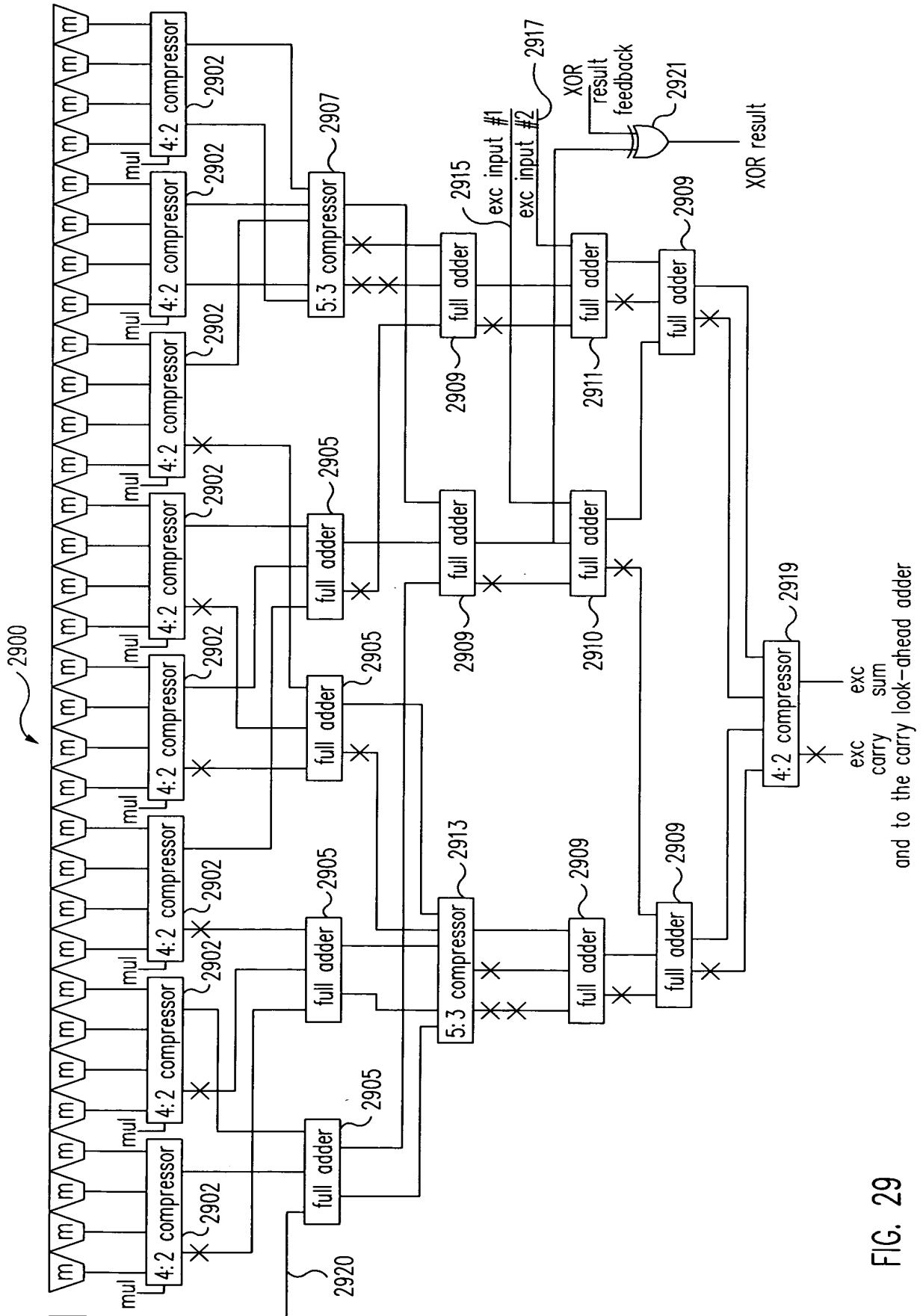




FIG. 30

35/36

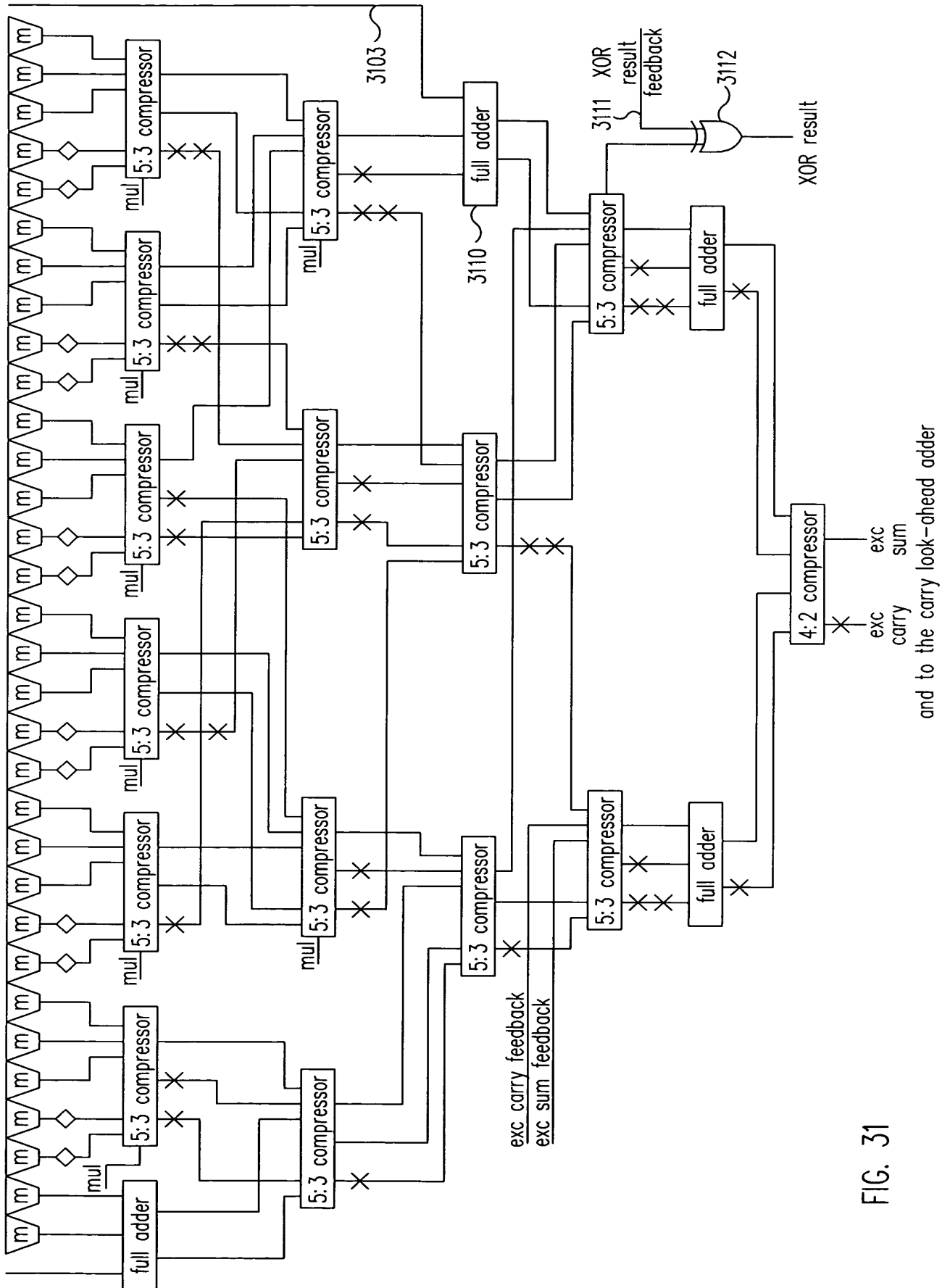


FIG. 31

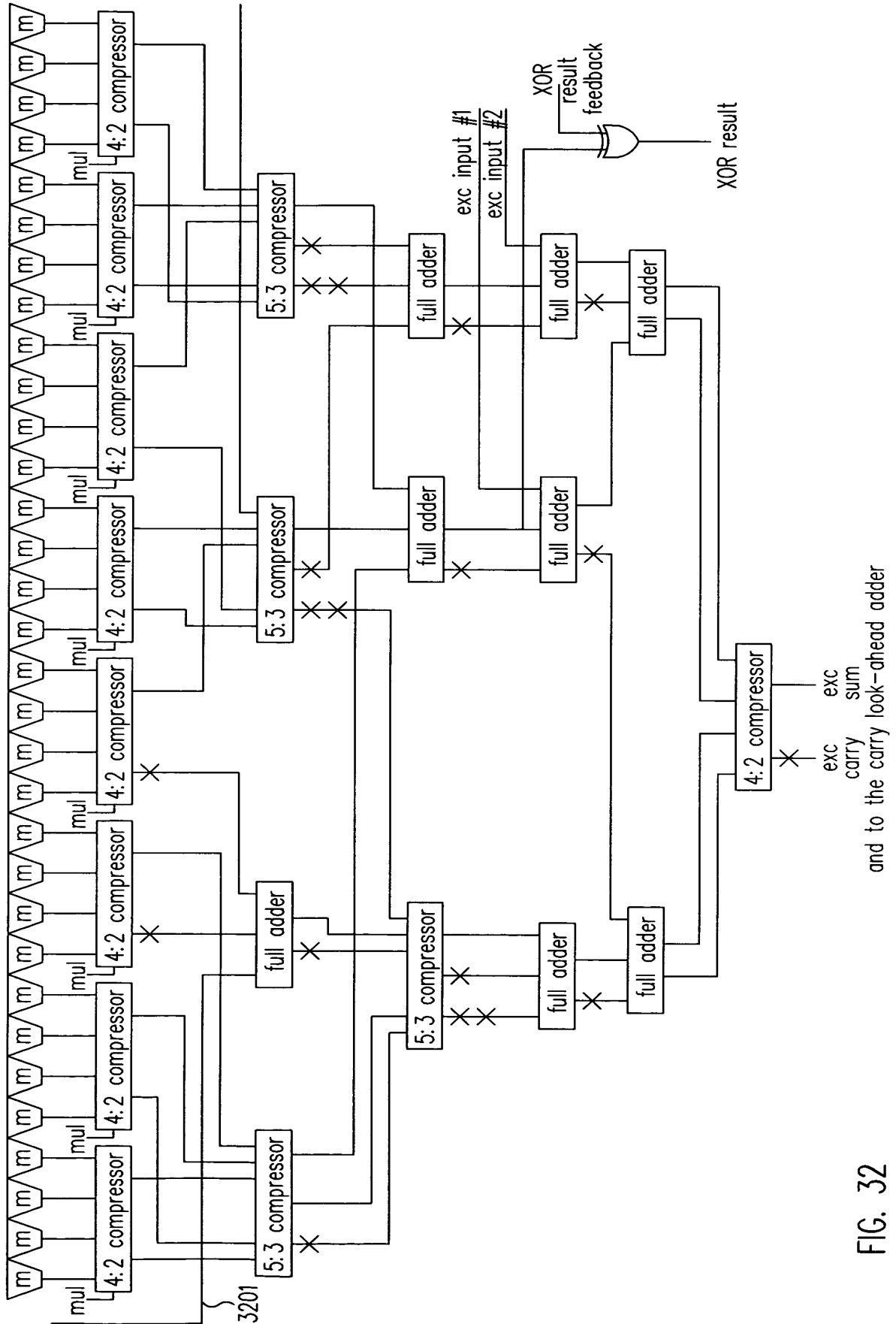


FIG. 32